

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.

| | | | | | |
|---|------------------|--------------------------------|---|---|---|
| 1. REPORT DATE (DD-MM-YYYY) 16-04-2007 | | 2. REPORT TYPE FINAL REPORT | | 3. DATES COVERED (From - To) July 2006 - July 2007 | |
| 4. TITLE AND SUBTITLE Quantitative Analysis of the Contributing Factors Affecting Specialty Care No-Show Rates at Brooke Army Medical Center | | | | 5a. CONTRACT NUMBER | |
| | | | | 5b. GRANT NUMBER | |
| | | | | 5c. PROGRAM ELEMENT NUMBER | |
| 6. AUTHOR(S) Freidline, Brian, T, CPT, MS | | | | 5d. PROJECT NUMBER | |
| | | | | 5e. TASK NUMBER | |
| | | | | 5f. WORK UNIT NUMBER | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Brooke Army Medical Center 3851 Roger Brooke Drive Fort Sam Houston, TX 78234-6200 | | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Medical Department Center and School BLDG 2841 MCCS-HFB (Army-Baylor Program in Health and Business Administration) 3151 Scott Road, Suite 1411 Fort Sam Houston, TX 78234-6135 | | | | 10. SPONSOR/MONITOR'S ACRONYM(S) | |
| | | | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) 3-07 | |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited | | | | | |
| 13. SUPPLEMENTARY NOTES | | | | | |
| 14. ABSTRACT When Brooke Army Medical Center primary care providers refer their patients for care in one of the specialty care clinics, there is a specific and important medical reason for that follow on care. There are several serious problems associated with patients that fail to attend their appointments (no-show). Some examples include patients' health is placed in jeopardy because specialized care is not received; liability is increased for BAMC and its providers because they are responsible for managing the patients' care; access to care is negatively affected because appointment times go un-utilized; provider productivity is not maximized and they lose relative value units for the hospital; and, unnecessary referrals are sent to the San Antonio hospital network when that workload could be captured at BAMC, saving the government unnecessary costs. This study analyzed no-show appointments taking place in BAMC specialty care clinics during quarters 3 and 4 in fiscal year 2006. Correlations between no-shows (the dependent variable) and several other independent variables showed that a patient's age, branch of service, beneficiary category, enrollment status, day of the week, type of provider seen, and wait times all demonstrated statistical significance in contributing to no-shows. The study also determined which clinics had the highest and lowest no-show rates. BAMC's average no-show rate was 7.33%. | | | | | |
| 15. SUBJECT TERMS No-Show Rates, Missed Appointments, Referral Management | | | | | |
| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT UU | 18. NUMBER OF PAGES 57 | 19a. NAME OF RESPONSIBLE PERSON Education Technician |
| a. REPORT U | b. ABSTRACT U | c. THIS PAGE U | | | 19b. TELEPHONE NUMBER (Include area code) (210) 221-6443 |

Running Head: BAMC SPECIALTY CARE NO-SHOW RATES

Army-Baylor University Graduate Program in Health Care and Business Administration

Quantitative Analysis of the Contributing Factors Affecting Specialty Care No-Show
Rates at Brooke Army Medical Center

Presented to Kenneth Finstuen, M.Sc., M.Ed., Ph.D.

In partial fulfillment of the requirements for
HCA 5661: Administrative Residency: Completion of the Army-Baylor University
Graduate Program in Health and Business Administration

By
CPT Brian Freidline

Fort Sam Houston, TX
30 March 2007

20080304261

Abstract

When Brooke Army Medical Center primary care providers refer their patients for care in one of the specialty care clinics, there is a specific and important medical reason for that follow on care. There are several serious problems associated with patients that fail to attend their appointments (no-show). Some examples include patients' health is placed in jeopardy because specialized care is not received; liability is increased for BAMC and its providers because they are responsible for managing the patients' care; access to care is negatively affected because appointment times go un-utilized; provider productivity is not maximized and they lose relative value units for the hospital; and, unnecessary referrals are sent to the San Antonio hospital network when that workload could be captured at BAMC, saving the government unnecessary costs.

This study analyzed no-show appointments taking place in BAMC specialty care clinics during quarters 3 and 4 in fiscal year 2006. Correlations between no-shows (the dependent variable) and several other independent variables showed that a patient's age, branch of service, beneficiary category, enrollment status, day of the week, type of provider seen, and wait times all demonstrated statistical significance in contributing to no-shows. The study also determined which clinics had the highest and lowest no-show rates. BAMC's average no-show rate was 7.33%.

Table of Contents

| | |
|---|----|
| Disclaimer..... | 6 |
| Statement of Ethical Conduct in Research..... | 6 |
| Introduction..... | 7 |
| Conditions that Prompted the Study..... | 7 |
| Purpose Statement..... | 7 |
| Statement of the Problem and Research Question..... | 7 |
| Literature Review..... | 8 |
| Health Care and the Department of Defense..... | 8 |
| Referral Management..... | 9 |
| Missed Appointments and Associated Problems..... | 11 |
| Reasons Patients Miss Appointments..... | 14 |
| Solutions to Reduce No-shows Rates..... | 16 |
| Industry Trends..... | 18 |
| BAMC Referral Management Process..... | 20 |
| Methods..... | 22 |
| Research Design..... | 22 |
| Dependent and Independent Variables..... | 22 |
| Data Analysis Techniques | 23 |
| Sample and Data Collection..... | 24 |
| Validity and Reliability | 25 |
| Results..... | 26 |
| Total Appointments..... | 26 |

| | |
|--|----|
| Appointments by Gender..... | 26 |
| Appointments by Beneficiary Category..... | 26 |
| Appointments by Branch of Service..... | 27 |
| Appointments by Enrollment Status..... | 27 |
| Appointments by Time of Day..... | 27 |
| Appointments by Day of Week..... | 28 |
| Appointments by Provider..... | 28 |
| Appointments by Age..... | 30 |
| Appointments by Wait Times..... | 30 |
| Appointments by Clinic..... | 31 |
| Discussion..... | 31 |
| Individual Patient Variables..... | 32 |
| Situational Variables..... | 34 |
| Wait Time Variables..... | 35 |
| Limitations..... | 36 |
| Recommendations for Improvement..... | 36 |
| Recommendation for Further Study..... | 39 |
| Conclusion..... | 40 |
| References..... | 43 |
| Appendix A: BAMC Organizational Structure | 46 |
| Appendix B: Consult and Appointment Management Organization Chart..... | 47 |
| Appendix C: Flow Diagram of the Referral Process | 48 |
| Appendix F: No-Show Rates by Clinic..... | 49 |

| | |
|--|----|
| Appendix G: Code Sheet for Predictors of No-shows..... | 50 |
| Appendix H: Sample Specialty Care Referral | 52 |
| Appendix I: Specialty Referral Consult Card | 53 |
| Appendix J: Acronyms..... | 54 |
| Appendix K: Reasons Patients Fail to Show for Appointments | 56 |
| Appendix L: Sample Interview Questions..... | 57 |

Disclaimer

The views expressed in this study are those of the author and do not reflect the official policy or position of Brooke Army Medical Center, the Department of the Army, Department of Defense, or the United States Government.

Statement of Ethical Conduct in Research

Patient confidentiality was strictly adhered to during this research study. Patients' medical information was protected at all times, and under no circumstances will it be discussed or released to any outside agency.

Introduction

Conditions that Prompted the Study

In the first quarter of fiscal year (FY) 2006, there were 12,550 specialty care referrals at Brooke Army Medical Center (BAMC). Out of that total number of referrals, 10.53% of the patients were identified as no-shows for their specialty care appointments. When BAMC providers send their patients for further care in one of the 48 different specialty care clinics, there is a specific and important medical reason for that referral. When 1 out of 10 patients fail to show for their appointments, this indicates a significant breakdown in the management of patient care and puts the patients at risk for unfavorable health outcomes. The Institute of Medicine published a report in 2001 on the state of the health care system which included several goals for the overhaul of the system, which include making the system safe, effective, patient-centered, timely, efficient, and equitable. Appropriately utilizing specialty care is a key component of these goals (Kripke, 2006).

Purpose Statement

The purpose of this paper is to explore and describe the specialty care referral process for direct care appointments at BAMC, provide an analysis of no-show rates for referrals, examine predictors of missed appointments, and discuss recommendations on how to address the missed appointments.

Statement of the Problem and Research Question

There are several serious problems associated with patients not keeping their specialty care appointments. Sometimes, patients' health is placed in jeopardy because important and more specialized care is not received, liability is increased for BAMC and

its providers because they are responsible for managing the patients' care once they are referred, access to care is negatively affected because appointment times go un-utilized, provider productivity is not maximized and they cannot maximize relative value units (RVUs) for the hospital, and unnecessary referrals are being sent to the San Antonio hospital network when that workload could be captured at BAMC, saving the government unnecessary costs. The exact reason why patients miss their specialty care appointments is not fully known.

In response to these problems with no-shows, this study will be conducted to analyze the medical center's no-show rates. The research question for this study is, what are the contributing factors affecting no-show rates for specialty care clinics at BAMC?

Literature Review

Health Care and the Department of Defense

The Department of Defense (DoD) operates a medical program which provides health care services to the active duty and retired members of the armed forces, their dependents, and survivors. There are approximately 8.3 million individuals who are eligible to receive care through the Military Health Services System (MHSS). The DoD operates medical centers, hospitals, and clinics for active duty service members, dependents, and retirees. For those that are eligible, they can receive medical care under a program known as TRICARE (Shi & Singh, 2004).

The TRICARE program has three major features. The first feature is the program is regionally managed, which facilitates administration of the program. Second, it is structured after managed care. Finally, TRICARE brings together the medical resources of the Army, Navy, and Air Force, and supplements them with networks of civilian

health care professionals. To control the health care costs, TRICARE is financed on a capitation-based method of assigning health care budgets to the various military departments (Shi & Singh, 2004).

Individuals have different levels and types of health care benefits which are all dependent upon the type of beneficiary they are. Active duty service members must use military treatment facilities for their needed health care. Family members or dependents of active duty personnel as well as military retirees and dependents who are not eligible for Medicare have a choice for their care. They are allowed to choose from one of three main options:

TRICARE Prime is similar to a civilian health maintenance organization (HMO). Beneficiaries are assigned to a primary care manager, who coordinates all aspects of their medical care. TRICARE Standard is a fee-for-service plan that allows beneficiaries to seek care from any civilian provider and be reimbursed for a portion of the costs after paying copayments and meeting deductibles. For some services, beneficiaries are required to seek care first from a military medical treatment facility when possible. TRICARE Extra is similar to a civilian preferred provider organization. Beneficiaries pay lower copayments than they would under TRICARE Standard if they seek care from a provider in the TRICARE network (Congressional Budget Office, 2003, p.26).

Referral Management

Since the early 1980s, managed care has grown dramatically in the United States. By 1993, over 70% of all Americans with health insurance were enrolled in some form of managed care plan (Glied, 1999). The term referral management (RM) was introduced

into managed care to reduce unnecessary services and contain healthcare costs. There are two referral management strategies, which are either prospective or retrospective.

Prospective strategies involve gate keeping and adhering to mandatory preauthorization from a utilization management office. Retrospective strategies involves referral profiling and appropriateness reviews. Referral management is commonly used by health plans and provider groups (Kim, Williamson, Herman, Safford, Selby, Marrero et al., 2003).

The Military Health System (MHS) acts as a type of managed care organization and is actively involved in referral management, which is a process for managing and tracking specialty care referrals within and outside of the treatment facility. However, that is only one important process in this effort.

Referral management is vital because it provides a patient-centered approach by ensuring the patient receives the best possible, timely, and cost effective specialty care while at the same time optimizing the MTF's clinical specialty capabilities. By optimizing its clinical specialty capabilities, the MTF is not only ensuring a patient-focused approach to its services but also guaranteeing that its personnel maintain the critical expeditionary medicine skills (U.S. Air Force MTF Referral Management Center Users' Guide, 2003, p. 4).

When a patient needs a specialty care referral, the primary care physician/manager (PCP/PCM) usually decides when to refer and to whom a patient should be referred. Assistance from a specialist is required for several reasons. These include diagnostic or therapeutic dilemmas, management of conditions that presented too infrequently to maintain clinical competence, and/or specialized procedures that fall outside a physician's scope of practice. In many of the cases, physicians refer at the

patient's request to see a specialist. There is a substantial demand for specialty care, and approximately 1 in 20 (5.1%) office visits lead to a referral (Forrest, 2002).

The five most common specialists to whom patients were referred were orthopedic surgeons, general surgeons, otolaryngologists, gastroenterologists, dermatologists, and cardiologists. Among male patients, referrals to urologists were the second most common type. Among female patients, referrals to obstetrics/gynecologists (ob/gyn) were the third most common type (Forrest, 2002).

Missed Appointments and Associated Problems

One way in which patients put strain on a health care system is failing to show up for scheduled appointments. No-show patients are those patients who failed to keep or properly cancel a scheduled appointment. Patients who no-show for their appointments can cause significant problems for the system with regard to cost, quality, and access.

When patients fail to show up for their scheduled medical appointments, there are several serious issues that can affect both the patient as well as the medical facility. The most serious result of the no-show is that the patient misses out on an opportunity for timely health care intervention (Guse, Richardson, Carle, & Schmidt, 2003). For example, in patients that are being treated for diabetes, missed appointments have been associated with greater obesity levels, higher blood pressure, and more microvascular complications. Furthermore, depression in patients with HIV and antidepressant use in patients with diabetes is associated with increased missed appointments (Ciechanowski, Russo, Katon, Simon, Ludman, Von Korff et al., 2006).

Another problem associated with higher no-show rates is a reduction in clinical productivity. The ease of seeing a specialist varies from clinic to clinic. However,

patients who need specialty care services have to wait to be seen because a specific time has been blocked for an originally scheduled patient (Moore, Wilson-Weatherspoon, & Probst, 2001). When patients have to wait too long, there is often further break downs in productivity. For example, if patients have to wait an excessively long time for an appointment, this can lead to an increase in patient phone calls, both to primary care and specialty care offices. It can also lead to an increase in unnecessary visits to other primary care physicians, urgent care centers, or emergency departments. Some patients will try to search the system looking for other ways into the health care system and into the referral specialist's office. This results in an increased use of needless laboratory tests and services, which spreads inefficiency, waste, and discontent throughout the medical system (Murray, 2002).

Decreasing productivity also leads to higher costs for health care organizations. This is extremely important because most organizations are trying to control unnecessary costs and to operate efficiently. Medical resources are wasted by the millions of patients who fail to turn up for hospital appointments. This problem affects more than just the United States. Missed appointments cost the National Healthcare System (NHS) in England a significant amount of money last year. Official figures from the NHS showed 5.7 million appointments were missed in 2004-2005 (Carvel, 2006).

When patients have problems getting their needed specialty care, they often become dissatisfied. This is an issue because satisfaction is a key factor in health care quality and a vital health care outcome. Patient satisfaction is related to differences between what a patient experiences at a clinic and what they expected to receive. Narrowing the gap between those two elements can significantly enhance patient

satisfaction (Jennings, 2005). Clinics which achieve high scores in patient satisfaction indicate that the clinic provides quality care from the patient's perspective. High patient satisfaction has important positive effects on an organization, such as enlarged market share, improved clinical quality, and increased employee retention (Walker, 2006).

Provider satisfaction is also extremely important for health care organizations. Patients who miss medical appointments and fail to properly cancel often result in increased provider frustration, reduced levels of provider empathy, and patient to provider communication (Ciechanowski et al., 2006). Provider satisfaction contributes to the quality of health care they provide. Therefore, this is an area that cannot be overlooked. Studies have shown that greater physician satisfaction is associated with better prescribing practices, patient adherence, and higher patient satisfaction. Furthermore, physician satisfaction usually results in less provider turnover in the clinics. This in turn leads to better continuity of care for the patients, higher patient satisfaction, and lower administrative costs of replacing and recruiting physicians (Grembowski, Ulrich, Paschane, Diehr, Katon, Martin et al., 2003).

Missed appointments have been shown to reduce learning opportunities for physicians in normal practices and especially in residency training settings. According to the 1997 study (Weingarten, Meyer, & Schneid), first year residents had the lowest kept appointment rates, which were 87%. The first year residents mostly saw patients who were new to them, and to the clinic. The kept appointment rates for second and third year residents were better at 94% and 93% respectively. The study showed that a longer association between the patients and the provider result in better attendance for appointments (Weingarten et al., 1997).

Reasons Patients Miss Appointments

Considering the serious impacts that missed appointments have on an individual's health, clinical productivity, and cost to health care facilities, it is understandable why administrators and other hospital staff members are attempting to address this important issue. There are numerous reasons why patients miss appointments and several studies have looked at both individual patient characteristics as well as the referral management process in general to figure out how to tackle the issue.

Patient demographics play a significant role in determining the type of patient that will most likely to no-show for their appointments. Prior research has shown that patients who fail to make their appointments tend to be of lower economic status and are often younger. The age group younger than 40 years often reported higher rates of missed appointments (Weingarten et al., 1997). Patients with high rates of missing appointments often have a history of failed appointments, have psychosocial problems, and have health benefits provided by the government (Lacy, Paulman, Reuter, & Lovejoy, 2004). The time of day also has an impact on patients keeping an appointment. According to Moore, Wilson-Witherspoon, and Probst (2001), patients were more likely to miss a scheduled appointment in the morning.

The method of payment for specialty care services can also determine which patients are more likely to miss medical appointments. According to a Minnesota residency study, Medicaid and self-paying patients (i.e., without health insurance) had higher no-show rates. Self-paying patients had a no-show rate of 11% and Medicaid patients had a no-show rate of 13%. Managed care, private insurance, and Medicare patients have low missed appointment rates ranging from 3-5% (Weingarten et al., 1997).

Longer wait times also lead to more missed appointments. The referral process and authorization of specialty care services can take time depending on the clinic's access and efficiency. Not only are there long delays and waits between the primary care visit and specialty care visit, but the process can be rather burdensome and confusing for patients and physicians alike (Murray, 2002). There are three main reasons why patients experience long wait times for a referred appointment. First, patients have to wait for access to an appointment in a primary care clinic. Second, they have to wait in the medical office itself. Third, they must wait for the access to specialty care once the primary care physician has decided to refer them for follow on care. The gap between the supply and demand in specialty care is frustrating and dissatisfying for the patients since it wastes time, causes anxiety in the delay of patient care, and causes the potential of unfavorable medical outcomes (Murray).

Certain emotional barriers can effect a patient's compliance in keeping medical appointments. According to Lacy et al. (2004), 65% of patients studied mentioned emotional barriers as reasons for missing appointments. The negative emotions that patients have about seeing their provider were greater than the actual perceived benefit of keeping the medical appointment. Patients were also hesitant to keep appointments when they knew they would endure an uncomfortable procedure, such as a pelvic examination, shots, being weighed, or having blood drawn. Fear is also a noted barrier. Patients often do not want to keep the appointment with the physician because they may hear unwanted news (Lacy et al., 2004).

Disrespect by a provider or staff member towards a patient will also negatively affect no-show rates. They occasionally discount patients' time, opinions, and feelings.

One way patients viewed being disrespected was through wait times (to get appointments, in the waiting rooms, and then in the examination rooms). At times, patients felt the staff did not respect their medical history, mainly if the signs and symptoms had resolved by the time the patient saw his/her provider. This type of disrespect brings out the norm of reciprocity, which means a patient who feels disrespected would feel little or no obligation to respect the health care system (Lacy et al., 2004).

Another reason appointments are missed can be related to patients not understanding what happens in a clinic when there is a no-show. Patients seemed unaware of the financial impacts of a missed appointment. In fact, many actually thought it was a welcomed event for the provider and staff. Some patients thought the appointment slot would just go to the next patient and others thought it allows the clinical staff more free time. Patients also felt that the appointment schedules are rather fluid and are subject to negotiation (Lacy et al., 2004). Other reasons for failure to appear include forgetfulness, lack of transportation, feeling better health-wise, lack of sense of urgency for the appointment, and short notice appointments (Moore et al., 2001).

Solutions to Reduce No-show Rates

Many different options have been tried in attempts to reduce the high number of no-shows in various clinics. The most popular and most effective options have been reminder calls or mailings. Some clinics have taken further steps besides those. Other methods used by health care organizations include providing transportation for the patients, better and new patient education programs, and providing incentives and disincentives for appointment attendance. Some clinics have even tried to overbook their

clinics by likely no-show rates (Lacy et al., 2004).

Text messaging trials are currently in progress in England to help with appointment reminders. Text messages sent via mobile phone will soon be sent to patients to remind them of upcoming appointments with their provider. The goal of this initiative is to reduce the burden of missed appointments. Instead of the National Healthcare System paying for the text messages, it hopes to have sponsorship from companies that will place advertisements in the message after the appointment reminder is sent. The message will be very basic saying "you have an appointment at Homerton at such and such a time, please call this number if you can't make it" (Dyer, 2006).

Some policy makers believe fining the patients a certain amount of money would be a deterrent to missing appointments. Several clinics and hospitals already do this around the country. For example, at Washington University, students are charged \$10 for any missed allergy or annual pap smear appointment. For a missed dermatology appointment, students are charged \$45 for any appointment missed without 48 hour notice (Washington University, 2002). In the Vein Treatment Surgery Center in Texas, failure to properly cancel cosmetic appointments will result in forfeiture of the patients' \$100 deposit. For medical appointments, if a patient does not cancel by the deadline, he/she is charged a \$35 missed appointment fee (Vein Treatment Surgery Center, 2005).

Fining patients who fail to attend their medical appointments has been looked at for England's NHS. Practice nurses and patients have called for more flexible surgery times in attempts to increase appointments. However, they are opposed to initiatives that would include fines for patients who fail to cancel an appointment they cannot keep. There needs to be more education for patients in order for them to be aware of the costs

associated with abusing the system. If patient awareness does not work, the NHS will have to rethink its position (Dinsdale, 2001).

Another way to reduce no-show rates is to apply better business concepts to the analysis of appointment schedule data. This allows administrators and physicians to use data and improve practice efficiency. The goal for appointment schedule analysis is to maximize the number of patients who are seen during a clinic's hours of operation, as well as maintain patient access, quality of care, and patient satisfaction. An example of this is using data to look at clinic fill rates. If the fill rate is much lower than 90%, this indicates too few patient visits or too many missed appointments are most likely harming the practice. There is a wealth of information in appointment schedules that can be used to better a medical practice (Buttz, 2004).

Industry Trends

There are some important trends in the U.S. health care sector that affect referral management and patient no-show rates. One of these trends is the rising cost of health care. Total national health care expenditures rose 7.9% in 2004, which is three times the rate of inflation. The total dollar amount spent was \$1.9 trillion, or \$6,280 per person. Total health care spending represented 16% of the gross domestic product (GDP), and health care in the United States is expected to increase at similar levels for the next decade. The National Coalition on Health Care claims the United States spending on healthcare will reach \$4 trillion in 2015, which is 20% of the country's GDP (National Coalition on Health Care, 2004).

These trends in health care expenditures have also had a tremendous affect on the Department of Defense and the Military Health System. The DoD continues the arduous

task of providing peacetime health care for military personnel, retirees, and their dependents and survivors. The department's annual spending towards medical care and expenses almost doubled between 1988 and 2004, increasing from \$14.6 billion to \$27.2 billion. Additionally, because the active duty force was downsized by 38% during that same period, spending per active duty service member nearly tripled, increasing from \$6,600 to \$19,600 (Congressional Budget Office, 2003).

More than half of the total increase in health care spending per active-duty service member from 1988-2003 can be credited to the national changes in health care costs. These changes include: more technology, changes in utilization of health care services, and higher medical prices. These trends are expected to continue. However, an additional 41% of the growth can be credited to events that most likely will not occur again.

One was a shift in the mix of DoD's beneficiary population: the number of active duty service members and their dependents fell substantially during the military drawdown after the Cold War while the number of retirees and their dependents grew, pushing up spending per active duty service member (Congressional Budget Office, 2003).

In an attempt to contain these costs, improve quality, and ensure timely access to health care services for its beneficiaries, the TRICARE Management Activity (TMA) negotiated the next generation of TRICARE contracts called TNEX. The next generation of contracts was established to better serve its beneficiaries. One of the major differences of TNEX and the prior version of TRICARE contracts is the MTF level will control its purchase care dollars. This will place more responsibility on the MTF commanders and hold them accountable for MTF performance and meeting its business plans (Williams,

2005). Claims for care that is seen in the network is paid by the Managed Care Support Contractor (Humana Military) who will then be reimbursed from MTF private sector care (PSC) funds. This demonstrates a financial incentive for the MTF to keep as much specialty care within the MTF as possible. Medical treatment facilities must analyze their primary and specialty care capabilities, along with their enrollment capacity, in order to meet their business plan objectives. The more health care services that remain in-house, the better off financially the MTF will be. According to Major General Kelly, "under revised financing, prime containment and referral management are critical processes for MTF survival. Through referral management strategies, MTFs will be able to ensure that their patients receive high quality, timely, and cost effective specialty care in both the direct and network care systems" (U.S. Air Force MTF Referral Management Center Users' Guide, 2003, p.5).

BAMC Referral Management Process

BAMC is a modern, state-of-the-art, 450 bed health care facility that provides level-one trauma and graduate medical education in San Antonio, Texas. It has 1.5 million square feet of operational space and is committed to providing the highest quality health care to all of its patients (BAMC Homepage, n.d.). The break down of the organization's structure can be seen in Appendix A.

When a BAMC patient needs specialty care services, that level of care is made possible through the Consult and Appointment Management Office (CAMO). The CAMO is a 63 person office located within BAMC that manages the referral process both externally and internally to the San Antonio Multi Service Market (SAMSM). The SAMSM includes BAMC, Wilford Hall Medical Center (WHMC), Randolph Air Force

Base Health Clinic, and the 37th Medical Group. The individual positions and the number of full-time equivalents (FTE) are shown on the CAMO organizational chart in Appendix B. The CAMO has a vital mission in the SAMSM which includes: (1) becoming the central specialty referral and primary care focal point for all health care appointing in the SAMSM, (2) a single source for external MTFs to access SAMSM, (3) and to be a single focal point for specialty care results for patients seen in the network and who receive care in the MTF, but are enrolled outside the direct care system (Graham, 2006).

The internal consult department manages referrals from a primary care physician to a specialty care provider in either BAMC or one of the other local military medical treatment facilities. The process is further illustrated in Appendix C. When a patient sees a provider in BAMC and a referral to a specialist is needed, the primary care physician will enter a consult into AHLTA/CHCS, the health care computerized scheduling system for the MHS. The consult is sent electronically to the CAMO and is then sent to the specialty clinic for review. A sample of an electronic consult can be found in Appendix F and a copy of the SAMSM referral consult card is located in Appendix G. The clinic reviews the consult and decides to accept or decline the appointment. Most of the referrals are accepted because one of the goals of the CAMO is to maximize the direct care system. If BAMC declines the consult, it is then sent to the same specialty clinic at WHMC. Once the clinic accepts the referral, the consult is annotated by the clinic as an available appointment for the MTF. The CAMO then contacts the patient and books the appointment. Occasionally, the patient will contact the CAMO first and then the CAMO will book the appointment, provided it has been reviewed by the clinic. Once the patient has the appointment time set in AHLTA/CHCS, the patient must either attend the

appointment or call the CAMO to cancel or reschedule. If a patient misses the appointment, he/she becomes a no-show and the appointment goes back to the "book box." The agents will then contact the patient in an effort to rebook the appointment. If the patient no-shows twice, the primary care manager is notified. Specialty care referrals stays in AHLTA/CHCS for 30 days. When 30 days have passed and the appointment has not taken place, the appointment slot administratively closes in the system (Graham, 2006).

If access cannot be achieved or other reasons prevent appointments within the direct care system, the consults are then sent to the external consult department. The CAMO also manages all appointments that are deferred to the network. Since this paper strictly deals with direct care referrals, external consults will not be discussed in-depth.

Methods

Research Design

This study utilized an exploratory and quantitative approach to answering the research question regarding no-show rates. The study retrospectively looked at specialty care referrals for Quarters 3 and 4 of FY 2006 taking place within BAMC. The clinics with the highest no-show rates and the clinics with the lowest no-show rates were identified along with which variables contributed to no-shows.

Dependent and Independent Variables

The dependent variable and focus of the study was specialty care appointments taking place in BAMC. The appointments were given either a "kept" or a "no-show" status. The operational definition of a no-show is an appointment in which the patient did not keep the appointment and did not give notice to the clinic (by calling to cancel or

canceling when the reminder was made). Several independent variables were analyzed during this study. They have been grouped into three distinct variables. Individual patient variables include the patients' age, gender, beneficiary category, branch of service, and TRICARE enrollment status. The situational variables include the time of day, day of the week, and provider by type. The final category shows the appointment variables which include three different wait times. Those wait times are: Time of referral until the time the appointment was made, time of referral until the appointment date, and the time the appointment was made until the appointment date.

Data Analysis Techniques

This study primarily focused on analyzing descriptive statistics regarding no-shows. The total sample size was generated and the different independent variables were broken down by their percentage of the total sample. The number of no-shows and kept appointments were then calculated. This engendered further calculations to determine the percentage of no-shows according to the independent variables.

Next, correlation coefficients were calculated to determine which independent variables had the greatest affect on no-shows. Correlation coefficients determine the direction and magnitude of the correlation and can range between 1.00 and -1.00. Correlations which have a value of 1.00 would have a perfect positive correlation and those with -1.00 would have a perfect negative correlation. The higher the correlation between the predictor (independent variable) and no-shows (dependent variable), the more likely that those observations tend to add to no-show behavior. If the correlation is positive, it indicates the likelihood to no-show for an appointment is greater than the average. If the correlation is negative, the opposite effect is true and the likelihood for

missing an appointment is less. If the p value is less than .05, this indicates that the correlation coefficients are statistically significant.

In this study, the question of interest is simplified into two competing claims. The first claim is the null hypothesis (H_0) and compared against the alternative hypothesis (H_a). The null and alternative hypotheses are as follows:

H_0 : The identified variables do not have an effect on the no-show rate for specialty care appointments at BAMC; $H_0: \mu_1 = \mu_2$.

H_a : The identified variables have an effect on the no-show rate for specialty care appointments at BAMC; $H_a: \mu_1 \neq \mu_2$.

This study was carried out in an attempt to reject one of these hypotheses.

Sample and Data Collection

The total sample for this study used data from 5,391 specialty care appointments ($n=5,391$). The participants in the study were active duty and retired members of the armed forces, their dependents, and survivors seen in one of the specialty care clinics at BAMC. The data for the no-show visits were retrospectively identified using the Composite Health Care System (CHCS), a data repository. The data came directly out of the Managed Care Program (MCP) referral file and shows when a patient is originally seen for an appointment, when the referral was created, and when the appointment was actually made. This file allows the researcher to identify all patient referrals, which provider wrote the referral, the enrollment status, and many other patient demographics.

The majority of this data was pulled using Microsoft Access. This allowed for different queries to be run to extract and then simplify pertinent data for the study. Once the data set was compiled, the information was imported into the Statistical Package for

the Social Sciences (SPSS) 12.0 for Windows. All descriptive statistics and correlation coefficients were calculated using SPSS. The code sheet for the dependent and independent variables are shown in Appendix F.

There are numerous appointments that take place in specialty care clinics, but several of the appointments were eliminated from this study. For example, a patient may be referred for physical therapy and have a total of 4 appointments set up with that clinic. For this study, only the first referral was counted and not the follow on visits or total number of encounters. Other appointment statuses were also eliminated. They include those appointments that were administratively closed, eliminated due to adjudication, pending, or closed due to administrative error.

The clinics for this study focused on those appointments which were only scheduled through the CAMO office. Some specialty clinics can actually be self booked which would cause un-standardized results. Clinics that had very few appointments were excluded from this study as well. For example, a clinic which sees two patients a month and had two no-shows is brought down to 0.0%. This study only used those clinics which make up 95% of all specialty care appointments.

Validity and Reliability

Reliability and validity are important concepts incorporated in this study. The primary source of data came from CHCS, an accurate and well managed automated system. CHCS provided reliability because the system has shown dependability in its ability to measure. This system is a trusted source and is used throughout the entire MHS. One of the assumptions regarding the automated systems is that data was entered correctly and will provide accurate results. Another area of reliability that applies to this

study is in its parallel form. Other studies have been conducted on the subject matter and this study produced similar results compared with previous literature. Validity was also present in this research and can be explained by the degree to which the predictors correlate with no-shows. The higher correlation between the measures, the better the validity is in the study.

Results

Total Appointments

Out of the total number of specialty care appointments in this study ($n=5,391$), 4,996 appointments were kept (92.67%) and 395 (7.33%) were no-shows. The percentage of no-shows was less than the initial number generated at the beginning of the study (10.53%).

Appointments by Gender

The gender distribution for the sample was fairly evenly distributed at 45.37% for males and 54.62% for females. The total number of males who had a specialty care appointment was 2,446. Out of that number, 180 were no-shows and 2,266 patients kept their appointments. The overall no-show rate for males was 7.36%. Females accounted for 215 no-shows and their no-show rate was 7.30%. Although the female gender had a lower percentage of no-shows, there was no statistical significance in the correlation between no-shows and appointments by gender.

Appointments by Beneficiary Category

Appointment status and the patient's beneficiary category were analyzed. The highest percentage of no-shows were in the category of active duty dependent/family members. Out of 851 appointments, 96 of them were determined to be no-shows. This is

an 11.28% no-show rate with a significant correlation of .066 ($p < .01$). Active duty service members had the second highest no-show rate of 8.92 with a correlation with no-shows of .034 ($p < .05$). Retirees had the lowest no-show rate with 69 no-shows out of 1,499 total appointments. This is showed retirees had a no-show rate of 4.60% with a significant correlation of -.065 ($p < .01$).

Appointments by Branch of Service

BAMC is an Army medical center and the Army had the majority of patient appointments (66.39%). San Antonio has a large Air Force population and they made up the second largest percentage of appointments (27.29%). The other two services analyzed in this study were the Navy (4.82%) and Marine Corps (1.60%). The Army had a no-show rate of 7.95% with a significant correlation of .033 ($p < .05$). The highest no-show rate was the Marine Corps at 16.28% with a correlation of .044 ($p < .01$). The lowest no-show rate was the Air Force at 4.89% with a significant correlation of -.057 ($p < .01$).

Appointments by Enrollment Status

TRICARE Prime and TRICARE Plus were the two different enrollment statuses analyzed in this study. The majority of appointments came from TRICARE Prime enrollees which equaled 88.44% of the sample. TRICARE Plus enrollees accounted for only 11.56%. No-show rates for TRICARE Prime and TRICARE Plus were 7.83% and 3.53% respectively. TRICARE Prime had a significant correlation with no-shows as .053 ($p < .01$) and TRICARE Plus had a significant correlation of -.053 ($p < .01$).

Appointments by Time of Day

The appointment time of day was then examined to see if patients were more likely to no-show in the AM or PM. Appointments scheduled in the AM accounted for

56.58% of the total number of appointments and PM accounted for 43.42%. No-shows in the AM had a no-show rate of 7.61% and no-shows in the PM had a rate of 6.96%. This shows patients were slightly more likely to no-show for their appointments in the AM, but the correlations did not show statistical significance.

Appointments by Day of the Week

Appointments taking place on different days of the week were evaluated for correlations with no-shows. Appointments during the week were fairly evenly distributed. The percentage of appointments were: Monday (18.29%), Tuesday (20.46%), Wednesday (21.61%), Thursday, (22.22%), and Friday (17.42%). The highest no-show rate took place on Monday with a rate of 8.92% with and a statistical significance of .029 ($p < .05$). Thursdays were the day with the lowest no-shows and had a rate of 5.51%. Thursdays showed significance with no-shows at -.037 ($p < .01$). The no-show rates for Tuesday (7.98%), Wednesday (7.30%), and Friday (7.24%) were all fairly close to the overall no-show average for the study. However, those days of the week showed no statistically significance.

Appointments by Provider

No-shows and the type of provider seen for the patient appointment showed interesting results. The two types of providers that accounted for the largest portion of the total appointments were physicians (47.80%) and other medical professionals (34.39%). The no-show rate for patients seeing other medical professionals was the second highest at 9.17% and had significance of .051 ($p < .01$). The highest no show rate was 12.88% with medical residents with significance of .048 ($p < .01$). The provider type which had the fewest number of no-shows was with a physician. The no-show rate for appointments

with physicians was 5.74% and was statistically significant at $-.058$ ($p < .01$). No-shows correlated with paraprofessionals and medical fellows both failed to yield statistically significant results. The complete table on individual patient and situational variables can be found below in Table 1.

Table 1. Descriptive Statistics and Correlates of Not Keeping Scheduled Appointments.

| Variable | <i>n</i> | Percent | Number of No-Shows | Number of Kept Appts | % of No-Shows | Correlation with No-Shows |
|------------------------------|----------|---------|--------------------|----------------------|---------------|---------------------------|
| Patient Appointment Status | 5,391 | 100.00 | - | - | - | - |
| Kept Appointment | 4,996 | 92.67 | - | 4,996 | - | - |
| No-Show | 395 | 7.33 | 395 | - | 7.33 | - |
| Individual Patient Variables | | | | | | |
| Gender | | | | | | |
| Male | 2,446 | 45.37 | 180 | 2,266 | 7.36 | .001 ^(ns) |
| Female | 2,945 | 54.62 | 215 | 2,730 | 7.30 | -.001 ^(ns) |
| Beneficiary Category | | | | | | |
| Active Duty | 1,244 | 23.08 | 111 | 1,133 | 8.92 | .034* |
| Active Duty Dependent | 851 | 15.79 | 96 | 755 | 11.28 | .066** |
| Retired | 1,499 | 27.81 | 69 | 1,430 | 4.60 | -.065** |
| Retired Dependent | 1,797 | 33.33 | 119 | 1,678 | 6.62 | -.019 ^(ns) |
| Branch of Service | | | | | | |
| Army | 3,574 | 66.30 | 284 | 3,290 | 7.95 | .033* |
| Air Force | 1,471 | 27.29 | 72 | 1,399 | 4.89 | -.057** |
| Navy | 260 | 4.82 | 25 | 235 | 9.62 | .020 ^(ns) |
| Marine Corps | 86 | 1.60 | 14 | 72 | 16.28 | .044** |
| Enrollment Status | | | | | | |
| Prime | 4,768 | 88.44 | 373 | 4,395 | 7.83 | .053** |
| Plus | 623 | 11.56 | 22 | 601 | 3.53 | -.053** |
| Situational Variables | | | | | | |
| Time of Day | | | | | | |
| AM | 3,050 | 56.58 | 232 | 2,818 | 7.61 | .012 ^(ns) |

| | | | | | | |
|----------------------------|-------|-------|-----|-------|-------|-----------------------|
| PM | 2,341 | 43.42 | 163 | 2,178 | 6.96 | -.012 ^(ns) |
| Day of the Week | | | | | | |
| Monday | 986 | 18.29 | 88 | 898 | 8.92 | .029* |
| Tuesday | 1,103 | 20.46 | 88 | 1,015 | 7.98 | .013 ^(ns) |
| Wednesday | 1,165 | 21.61 | 85 | 1,080 | 7.30 | -.001 ^(ns) |
| Thursday | 1,198 | 22.22 | 66 | 1,132 | 5.51 | -.037** |
| Friday | 939 | 17.42 | 68 | 871 | 7.24 | -.002 ^(ns) |
| Provider by Type | | | | | | |
| Para-professional | 195 | 3.62 | 17 | 178 | 8.72 | .010 ^(ns) |
| Other medical professional | 1,854 | 34.39 | 170 | 1,684 | 9.17 | .051** |
| Medical resident | 264 | 4.90 | 34 | 230 | 12.88 | .048** |
| Medical fellow | 501 | 9.29 | 26 | 475 | 5.19 | -.026 ^(ns) |
| Physician | 2,577 | 47.80 | 148 | 2,429 | 5.74 | -.058** |

* indicates significance of $p < .05$, ** indicates significance of $p < .01$, ^{ns} indicates no significance

Appointments by Age

The age of a patient was explored to determine if there was a correlation with no-shows. The mean age for patients studied was 48.70 years with a standard deviation of 17.59. The correlation with no-shows was statistically significant at $-.126$ ($p < .01$).

Appointments by Wait Times

The last variable evaluated in the study was to determine if there was any correlation between wait times and no-shows. Three different wait times were analyzed. The first focused on how many days were between the day a referral was generated and the actual appointment date. The mean for this variable was 21.88 days with a standard deviation of 14.96. The correlation with no-shows was significant at $.119$ ($p < .01$). The second variable examined the day a referral was generated, until the day the appointment was made (or booked in AHLTA/CHCS). The mean for this variable was 7.47 days with a significant correlation of $.092$ ($p < .01$). The third wait time variable focused on the day

the appointment was made till the day of the actual appointment. The mean was 14.41 days and had a statistically significant correlation of .090 ($p < .01$). Table 2 below shows the complete table for the age and wait time variables used in the study.

Table 2. Descriptive Statistics and Correlates of Not Keeping Scheduled Appointments for Age and Appointment Variables.

| Variable | Mean | Standard Deviation | Correlation with No- Shows |
|---|-------|-----------------------|----------------------------------|
| Age (years) | 48.70 | 17.59 | -.126** |
| Time of referral, till time of appointment (days) | 21.88 | 14.96 | .119** |
| Time of referral, till time appointment made (days) | 7.47 | 7.98 | .092** |
| Time appointment made, till time of appointment (days) | 14.41 | 11.57 | .090** |

* indicates significance of $p < .05$, ** indicates significance of $p < .01$, ^{ns} indicates no significance

Appointments by Clinic

The clinics with the highest and lowest no-show rates were identified and the complete table can be found in Appendix D. There were three which had a 0.00% no-show rate. Those were the Cardiac Rehabilitation, Holter Event, and Nephrology. Some of the other low no-show rate clinics were: Pain Management (1.27%), Endocrinology (1.52%), General Surgery (1.83%), Rheumatology (1.89%), and Pulmonary (2.07%). The one with the highest no-show rate took place in the Health Promotion Clinic (43.75%). The other high no-show clinics were: Child/Adolescent Psychology (31.03%), Psychology (23.44%), Nutrition (17.02%), and Sleep Disorder Center (14.74%).

Discussion

The results of this study suggest there are several contributing factors affecting no-shows in BAMC's specialty care clinics. Compared to literature available on missed

appointments, BAMC's overall no-show rate is reasonable. However, there is still room for improvement in certain clinics. This analysis has provided interesting insight to which factors contribute to missed appointments and these factors should be focused on in the future to reduce no-shows and increase clinic productivity.

Individual Patient Variables

The distribution of males and females for the study was fairly even at 45.37% and 54.62% respectively. The correlation revealed no statistical significance between appointment status and gender. Therefore, the gender of a patient is not a contributing factor in whether or not an individual misses an appointment. Efforts to reduce no-shows should not focus on whether a patient is male or female.

The study also looked to see if the age of an individual was a significant predictor of missing an appointment. The mean age for the study was 48. When the correlation was calculated between age and the appointment status, it yielded a significant number of -.126. The negative number in the correlation shows that younger patients tend to have higher no-show rates. As the age of the patient increases, the more likely they are to keep their scheduled appointments. This shows consistency in the literature because younger patients are often subject to more complicated schedules due to their children, work situations, or even their values. This is an important statistic to focus on because the Army and the other military services tend to have a large number of young personnel. The age variable could also be broken down further into different age categories for further study. This would show exactly which ages account for the largest percentage of no-shows.

The beneficiary category has also shown to be a predictor of missed appointments. The active duty dependents/family members had the highest rate of no-shows at 11.28%. However, the active duty dependants only account for 15.79% of the sample. Active duty personnel had the second highest no-show rate at 8.92% with active duty personnel accounting for 23.08% of all appointments. These no-show rates are the highest, however the total percentage of these two groups makes up less than 40% of the sample population. The retiree and retiree dependents had no-show rates of 4.60% and 6.62% respectively. Both groups together make up over 60% of the study sample. These results are promising considering they have the lowest rates for no-shows and make up the largest percentage of the sample.

The patient's branch of service was a contributing factor to whether a patient misses an appointment. Army beneficiaries had a no-show rate of 7.95% which was slightly higher than the total no-show average of 7.33%. The Army also had the highest percentage of total appointments at 66.30% for the entire sample. The service category with the highest rate of no-shows was among the Marine Corps at 16.28%. The Air Force patients had the lowest no-show rate which was 4.89%. Patients that are affiliated with the Air Force are much more likely to keep scheduled specialty care appointments.

The enrollment status of patients was also determined to be a predictor for missing an appointment. The majority of the patients were in TRICARE Prime (88.44%) and had a no-show rate of 7.83%. All active duty military service members are required to be enrolled in TRICARE Prime and many of the active duty family members are in the TRICARE Prime category as well. TRICARE Plus beneficiaries are all over the age of 65 and their no-show rate was only 3.53%. This is understandable considering the previous

findings on no-shows related to age. As a patient's age increases, they are more likely to show up for their medical appointments.

Situational Variables

The time of day was looked at to see if there was a significant relation between that and missed appointments. The distribution was fairly even between appointments in the AM (56.58%) and those in the PM (43.42%). After analyzing the correlation, it was determined that there was no statistically significant correlation between time of day and missed appointments. Previous literature on no-shows finds that more patients no-show in the mornings. Although the AM no-show rate (7.61%) is slightly higher than the PM rate (6.96%), this area should not be focused on to fix the problems with no-shows.

Certain days of the week showed to be contributors for missed appointments. Appointments on Mondays showed the highest rate for no-shows at 8.92%. Mondays also had the second lowest number of appointments that were scheduled (18.29%). Tuesday, Wednesday, and Friday had rates between 7.98% and 7.24% but they showed no statistical significance of being a predictor of no-shows. Thursdays were the day that had the lowest rate for no-shows at 5.51%. Also interesting is the fact that more appointments were scheduled for Thursday than any other day of the week (22.22%) and yet it has the lowest no-show rate. Efforts to help reduce no-show behavior should focus on Mondays. Analysis of Thursdays would also be valuable to see if there are major differences in clinic scheduling.

The type of provider a patient is scheduled to see at the visit showed to contribute to whether or not a patient kept an appointment. Patients who saw a provider in the "other medical professional" category had a no-show rate of 9.17%. Patients who were

scheduled with medical residents had the highest rate for no-shows at 12.88%. This is unfortunate for the medical residents because they miss out on valuable learning opportunities due to no-shows. Physicians on the other hand had a 5.74% no-show rate which was fairly low. The literature has shown that patients are more likely to no-show for an appointment with a non-physician provider. When a patient is scheduled for an appointment with his/her physician, he/she is more likely to keep the appointment due to the patient/physician bond and level of respect that develops over time.

Wait Time Variables

Each wait time variable showed to be a contributor to no-shows in the clinics. All wait times were both statistically significant and positive. This shows the longer patients have to wait, the more likely patients will be no-shows for their appointments. Efforts must be made to ensure the CAMO is meeting access to care standards and other time sensitive policies to ensure wait times are kept as low as possible. Wait times are quoted most often in previous studies as the biggest reason for no-shows. Another area which could be analyzed is how much time a patient sits waiting in the medical office itself. That variable was not measured in this study but is often quoted in previous literature as an important wait time factor.

This study provided an answer to the research question of what are the contributing factors affecting the no-show rates in the BAMC specialty care clinics. The variables which were significant predictors of no-shows were: age, beneficiary category, branch of service, enrollment status, day of week, provider by type, and each different wait time analyzed. The results of this study showed that the null hypothesis ($H_0: \mu_1 = \mu_2$) can be rejected, and to accept the alternate hypothesis ($H_a: \mu_1 \neq \mu_2$) because the means of

the different variables were not equal and the variables showed they contributed to no-shows.

Limitations

Although this study has strengths, it also has some limitations. The study's scope was limited since the research specifically focused on BAMC. There are several other medical centers and hospitals in the Army which BAMC could be compared with. The beneficiary populations will be similar, but the ways other facilities operate are different. This would be beneficial to analyze in attempt to see if another facility has lower no-show rates than BAMC. Another limitation for this study is the data only accounts for appointments which took place during quarters three and four in FY 2006. It may be valuable to look at results for a full fiscal year and even compare the yearly results with previous years. This would allow for comparisons and provide trends to analyze. Also, no monetary value or productivity numbers were calculated to provide emphasis on the reason no-shows can be so detrimental to a health care organization. Finally, all data came from CHCS and no interviews were conducted to determine exactly why these patients failed to show for their appointments.

Recommendations for Improvement

This study has shown several key factors which contribute to no-shows. It has also shown the no-show rates for most of the specialty clinics. With this knowledge, efforts can now be made to reduce the high no-show rates. The first thing to do is communicate the findings with the specialty clinics of concern, and with their leadership. If the results are not communicated, action can be taken. Next, it is important to address these clinics individually. When interpreting the results, the reader should be careful with

making assumptions with a snap shot of information. Not all clinics operate the same. Many appointments are different from others and they may not have one-on-one patient to provider sessions. The Health Promotion Clinic and Sleep Study Center are perfect examples of this. The providers have individual sit down appointments with their patients. However, they also have several meetings in which they have large classes and several patients are at the same meeting. If the Health Promotion Clinic is conducting a class which is scheduled for 25 patients and 2 are a no-show, the providers are not necessarily wasting time because they are still educating 23 patients.

Another area which could be addressed immediately is to find out if the clinics are currently using the Patient Appointment Reminder System (PARS). Most medical facilities use the reminder systems to call and also provide them an opportunity at that time to cancel their appointment if the patient has a conflict or no longer needs to attend. There are some clinics at BAMC that are currently not using the call back system. If those clinics are above a 5% no-show rate, they should begin using the PARS immediately to help reduce the no-shows.

One striking statistic is the fact that active duty and active duty family members have the highest rate for no-shows. Attention can also be brought to this issue immediately. The most effective solution is to create command awareness and involvement. The number of no-shows by military unit, or even a by name list for each unit could be easily generated by some of the analysts at BAMC. They could create a standard monthly reporting mechanism that goes directly to the Installation Commander and Command Sergeant's Major. No-show statistics can also be added to the agenda during monthly installation-wide Commander's Calls. The majority of commanders on

Fort Sam Houston have at least a basic knowledge of health care operations and could help rectify or reduce the no-show rates. This is especially true if the missed appointments can be tied to keeping a medically ready force. When active duty military fail to show up for an appointment, it could be impacting on the medical readiness of service members and entire units preparing to deploy to one of the current theaters of operation.

Addressing the issue of no-shows through the active duty personnel will hopefully spread to active duty spouses, but there is more which can be done. BAMC can engage in a marketing plan to effectively communicate the seriousness of patients attending their appointments or properly canceling them. There are numerous community meetings or events in which a BAMC marketing employee can push the message of keeping appointments. There are also several locations on Fort Sam Houston in which to put some literature to help create awareness. Another area worth looking into is having an email generated in addition to the Patient Appointment Reminder System. The Dental Command currently uses email reminders and those results could be looked at to analyze the benefits. At a later time, it would be beneficial to see results of text message reminders and their effectiveness as well. If text message reminders are shown to be effective in reducing no-shows, BAMC should look at the cost/benefit analysis of implementing this idea.

Another feasible option is to bring to highlight repeat offenders. Reports can be run to see which individuals habitually no-show for their appointments. If BAMC is serious about addressing this issue, staff members can run reports, call the individuals,

and tactfully explain that this behavior will not be tolerated. Repeat no-show offenders can also be brought to the attention of their command for necessary action.

One final recommendation is to look at the BAMC or clinic no-show policies. It is important to have a written policy in place for BAMC that describes actions to take regarding no-shows and what is an acceptable level of tolerance. One area that the DoD should look at is fining individuals for continual no-show behavior. Many civilian health care organizations currently fine their patients for missing appointments and failing to properly cancel. As the MHS continues to operate more like a business, it will need to conduct normal operations similar to civilian hospitals in order to maximize productivity and reduce unnecessary waste.

Recommendation for Further Study

There are numerous recommendations for further study on specialty care no-shows. One recommendation is to show how much productivity and workload is lost due to the missed appointments. Applying a dollar amount or calculating the missed opportunities for workload would create greater emphasis and importance on this problem. Comparing the BAMC results to other Army facilities or possibly the Air Force and Navy MTFs would also provide a valuable comparison. The Air Force beneficiaries had the lowest no-show rate at BAMC, but do they have the lowest no-show rates at their own facilities? These comparisons would have a significant amount of utility due to the recent discussions of having one medical command for all branches of service. If the Navy has lower no-show rates than the Army and Air Force, then its model for appointment booking and referral management may be the standard for the other military services to follow. Also, more individual demographics could have been studied, that is,

including the patients' marital status, race, rank or rank of sponsor, and whether the patient lives within the catchment area.

Another recommendation that would be extremely valuable is to conduct a qualitative study to determine why these patients did not show for their appointments. This would create the need to develop a telephonic survey (or perhaps a mail survey). This would allow a researcher to ask pertinent questions and determine why patients failed to properly cancel or show up for their scheduled appointment. Based on the literature, which includes the study by Hussain-Gambles, Neal, Dempsey, Lawlor and Hodgson (2004), there are many reasons patients do not show for their appointments. The full list from the study can be found in Appendix I. Another helpful resource can be found in the study by Lacy et al. (2004). This study allowed for a semi-structured interview with patients who failed to show for their appointments. The open-ended interview questions are shown in Appendix J. These two resources can provide ideas of how a researcher can begin tailoring a survey to fit their patient population. The survey should go before the Institutional Review Board for human subject approval prior to initiation.

Conclusion

The analysis of the study revealed which demographic and situational variables showed a significant correlation to no-show behavior. Correlations between the variables showed that a patients age, branch of service, beneficiary category, enrollment status, day of the week, type of provider seen, and wait times all showed statistical significance in contributing to no-show behavior. The study also showed which clinics had the highest and lowest no-show rates. BAMC's average no-show rate was reasonable at 7.33%.

Many clinics are doing well and are under 5% for no-shows, and others are over 20% and continue to struggle. There is definitely room for improvement for BAMC.

BAMC and other health care facilities continue to analyze their no-show rates and attempt to reduce these rates. There are several reasons to continue these efforts. These include: no-shows prevent a patient from receiving needed specialized care, it increases the liability for BAMC providers, reduces access to care due to non-utilized appointments, loss of productivity, and workload is often sent to the network which the government has to pay unnecessarily.

Efforts can be made immediately to help reduce these no-show rates. They include passing this information to clinic leadership, ensuring the patient reminder system is being used by all clinics, increasing command emphasis through out the installation, monitoring repeat offenders, and ensuring hospital no-show policies are up-to-date. Other things that are worth looking at in the future are the effectiveness of utilizing email reminders or even text messages to notify patients of an upcoming appointment and/or how to cancel. In the future the MHS should look into fining those patients for unacceptable numbers of missed appointments.

Several opportunities are available for a continuation of this study. Telephone or mail out surveys would provide a qualitative methodology to answering why patients fail to attend their appointments. There are also several comparisons that can be made between these results and other military treatment facilities, both Army and non-Army. Some additional demographic predictors could be looked at such as ethnicity, marital status, and whether the patient lives within the catchment area to determine significant correlations with no-shows. A final addition to the study would be to show the amount of

workload BAMC could recapture in the clinics by reducing no-shows. This could be a combination of the actual or average relative value units per missed encounter and even include dollar amounts to amplify the need to improve. The soft benefits of having less missed appointments such as healthy soldiers and provider satisfaction are hard to quantify, but could also be considerable.

This study has shows great utility to BAMC and possibly the entire MHS. There are several studies which analyze no-shows in family medicine or other primary care settings. However, no other study has been conducted in the MHS on why beneficiaries miss appointments in specialty clinics.

References

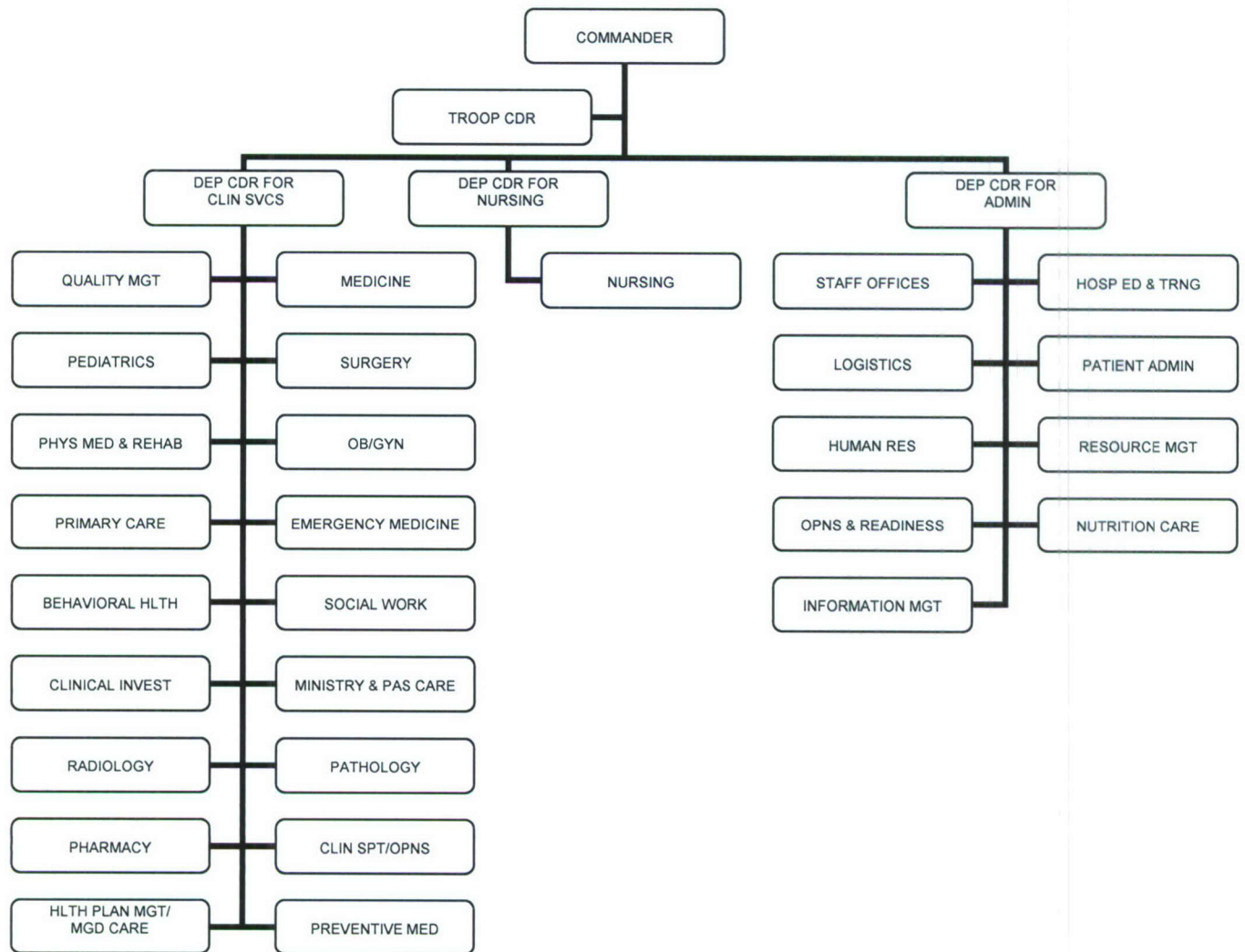
- Brooke Army Medical Center. (n.d.). Home page. Retrieved on August 8, 2006, from <http://www.bamc.amedd.army.mil/index.htm>
- Buttz, L. (2004). How to use scheduling data to improve efficiency. *American Academy of Family Physicians*, 11(7), 85-95.
- Carvel, J. (2006, May 9). Patient no-shows cost millions. *The Guardian*. Retrieved April 23, 2006, from <http://politics.guardian.co.uk/foi/story/0,,1776177,00.html>
- Ciechanowski, P., Russo, J., Katon, W., Simon, G., Ludman, E., Von Korff, M., et al. (2006). Where is the patient? The association of psychosocial factors and missed primary care appointments in patients with diabetes. *General Hospital Psychiatry*, 28, 9-17.
- Congressional Budget Office Study (2003). Growth in medical spending by the Department of Defense. 1, 25-26.
- Dinsdale, P. (2001). Practice nurses reject fines for missed appointments. *Nursing Standard*, 15(49), 8.
- Dyer, O. (2006) Patients will be reminded of appointments by text messages. *The British Medical Journal*, 326, 1281.
- Forrest, C. B. (2002). Family physicians' referral decisions: Results from the ambulatory sentinel practice network (ASPN) referral study. *Journal of Family Practice*, 51, 215-222.
- Glied, S. (1999). Managed care. NBER working paper no.7205. Retrieved April 23, 2006, from <http://www.nber.org/papers/W7205>
- Graham, S. (2006). Consult and appointment management office overview. Powerpoint

- presentation (unpublished), Brooke Army Medical Center, Fort Sam Houston, Texas.
- Guse, C. E., Richardson, L., Carle, M., & Schmidt, K. (2002). The effect of exit-interview patient education on no-show rates at a family practice residency clinic. *The Journal of the American Board of Family Practice*, 16, 399-404.
- Hussain-Gambles, M., Neal, N., Dempsey, O., Lawlor, D., & Hodgson, J. (2004). Missed appointments in primary care: Questionnaire and focus group study of health professionals. *British Journal of General Practice*, 54, 108-113.
- Jennings, B. (2005). Soldiers' experience with military health care. *Military Medicine*, 170, 999-1004.
- Kim, C., Williamson, D. F., Herman, W. H., Safford, M. M., Selby, J. V., Marrero, et al. (2003). Referral management and the care of patients with diabetes. Retrieved August 8, 2006, from <http://www.ajmc.com/Article.cfm?Menu=1&ID=2514>
- Kripke, C. (2006). Improving outpatient referrals to secondary care. *American Family Physician*, 73(5), 803-804.
- Lacy, N. L., Paulman, A., Reuter, M. D., & Lovejoy, B. (2004). Why don't we come: Patient perceptions on no-shows. *Annals of Family Medicine*, 2(6), 541-545.
- Moore, C. G., Wilson-Witherspoon, P., & Probst, J. C. (2001). Time and money: Effects of no-shows at a family practice residency clinic. *Family Medicine*, 33(7) 522-527.
- Murray, M. (2002). Reducing waits and delays in the referral process. *American Academy of Family Physicians*, 9(3), 39-44.
- National Coalition on Health Care (2004). Facts on the cost of health care. Retrieved August 8, 2006, from <http://www.nchc.org/facts/cost.shtml>

- Shi, L., & Singh, D. A. (2004). Health services for special populations. Delivering health care in America: A systems approach (3rd ed.). Sudbury, MA: Jones and Barlett.
- U.S. Air Force. (2003). MTF Referral Management Center (RMC) Users' Guide. Retrieved August 8, 2006, from <http://www.tricare.osd.mil/tai/downloads/ref.doc>
- Vein Treatment and Surgery Center. (2005). Information page. Retrieved August 8, 2006, from <http://www.spider-vein-treatment.net/>
- Walker, J. K. (2006). Patient satisfaction: The past directs the way to the future. *Journal of Perinatal and Neonatal Nursing*, 20(1), 88-90.
- Washington University in St. Louis (2002). WU health services information. Retrieved August 8, 2006, from <http://wusmhealth.wustl.edu/>
- Weingarten, N., Meyer, D. L., & Schneid, J. A., (1997). Failed appointments in residency practices: Who misses them and what providers are most affected? *The Journal of the American Board of Family Practice*, 10(6), 407-411.
- Williams, S. J. (2005). A quantitative analysis of the referral management process under the next generation of TRICARE contracts (TNEX). Graduate Management Project, U. S. Army Baylor University at Fort Sam Houston. Retrieved August 8, 2006, from <http://stinet.dtic.mil/stinet/jsp/advanced-tr.jsp>

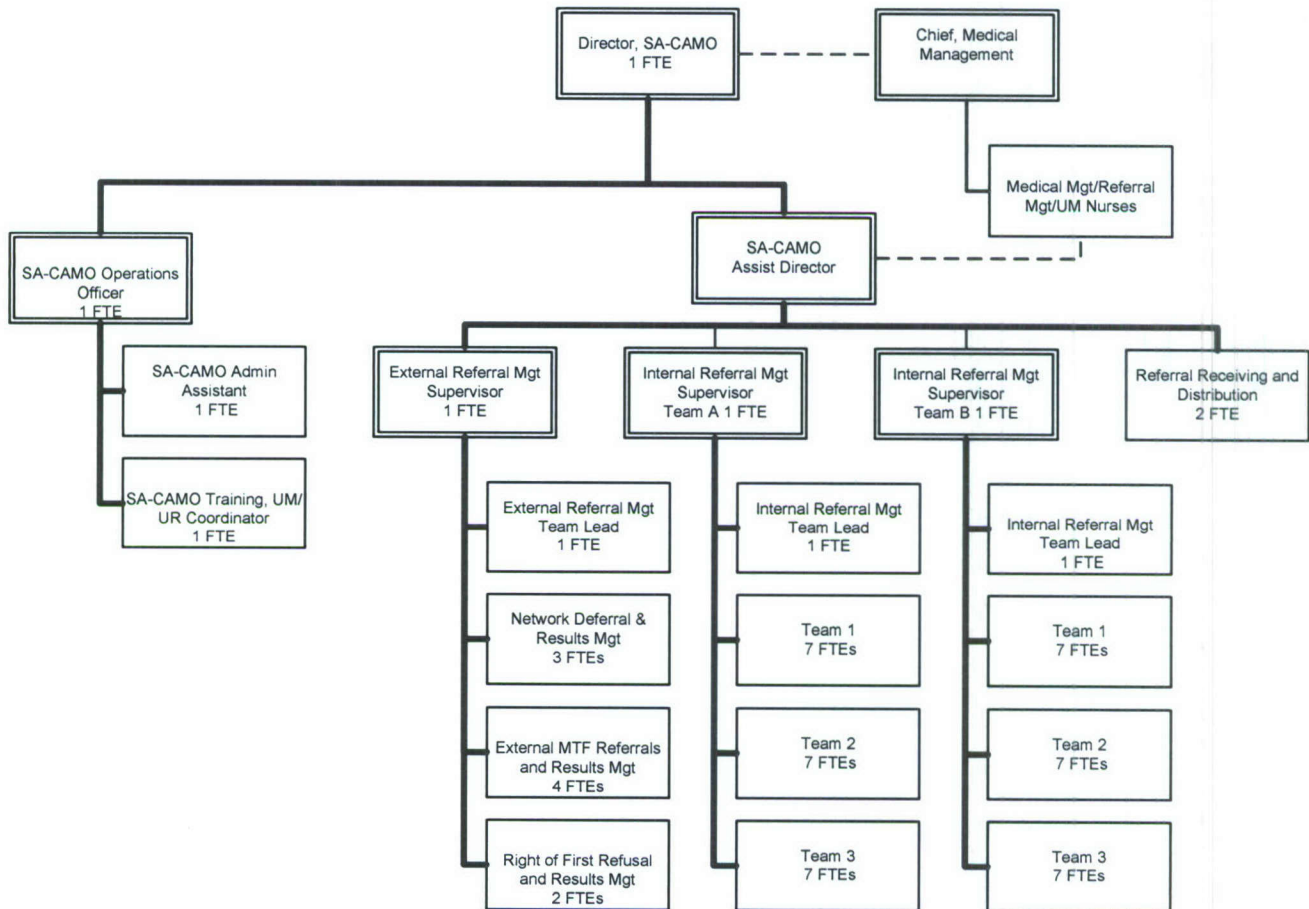
Appendix A

Brooke Army Medical Center Organization Chart



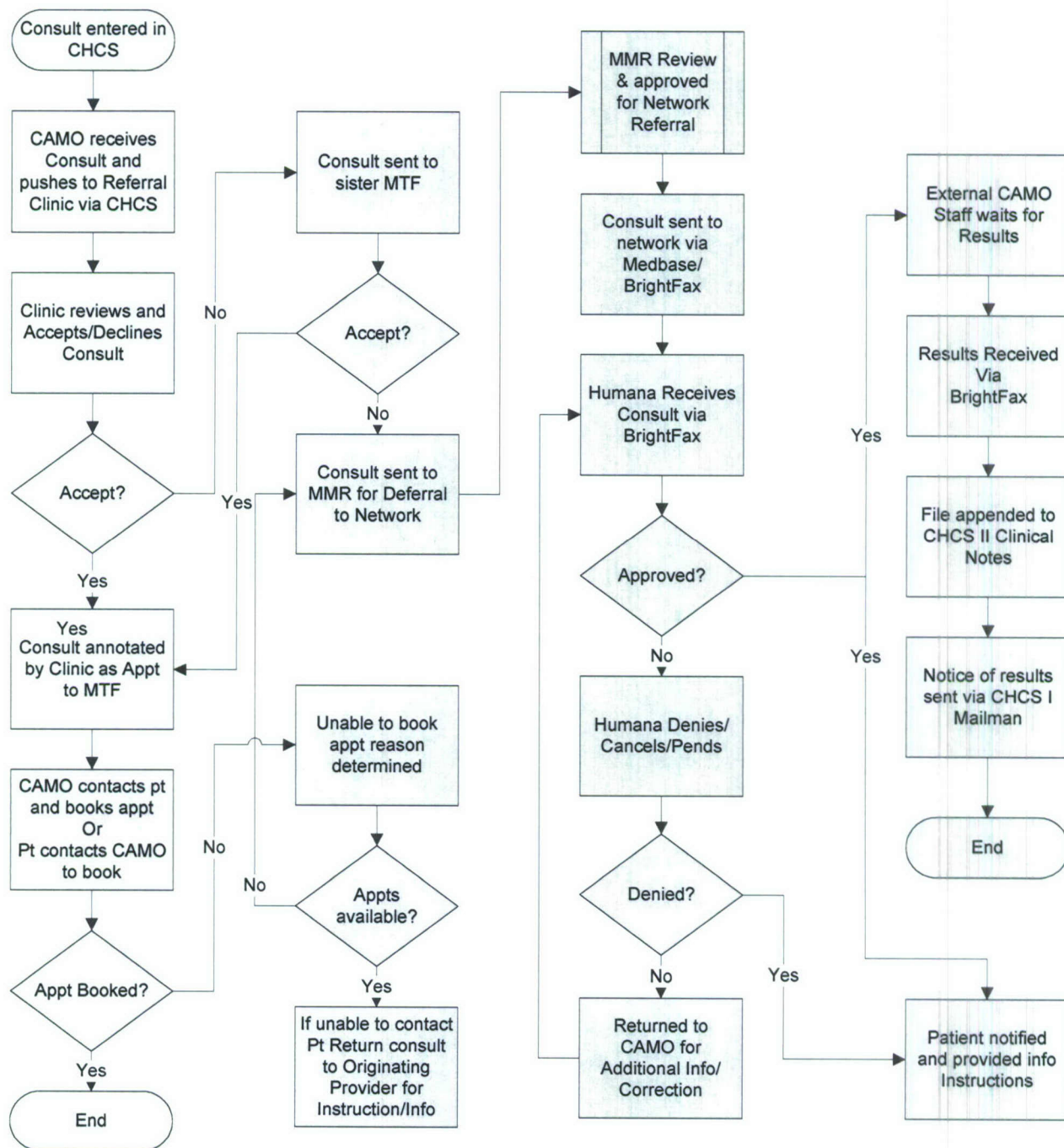
Appendix B

Consult and Appointment Management Office Organizational Chart



Appendix C

Referral Process Flowchart



Appendix D

No-Show Rates by Clinic

| CLINIC | KEPT | NO-SHOW | NO-SHOW RATE |
|------------------------------|------|---------|--------------|
| HEALTH PROMOTION CENTER,BAMC | 18 | 14 | 43.75% |
| CHILD/ADOL PSYCHOLOGY,BAMC | 20 | 9 | 31.03% |
| PSYCHOLOGY,BAMC | 49 | 15 | 23.44% |
| NUTRITION,BAMC | 195 | 40 | 17.02% |
| SLEEP DISORDER CENTER,BAMC | 81 | 14 | 14.74% |
| PHYSICAL THERAPY,TMC | 53 | 9 | 14.52% |
| AUDIOLOGY,BAMC | 133 | 22 | 14.19% |
| OPHTH PEDS,BAMC | 28 | 4 | 12.50% |
| OCCUPATIONAL THERAPY,BAMC | 135 | 18 | 11.76% |
| ALLERGY CLINIC,BAMC | 62 | 7 | 10.14% |
| NEUROLOGY,BAMC | 168 | 17 | 9.19% |
| PHYSICAL MED,BAMC/BO | 158 | 15 | 8.67% |
| CARDIOLOGY,BAMC | 241 | 22 | 8.37% |
| OPHTHALMOLOGY,BAMC BO | 177 | 15 | 7.81% |
| PODIATRY,BAMC | 83 | 7 | 7.78% |
| OTOLARYNGOLOGY (ENT),BAMC | 166 | 13 | 7.26% |
| GASTROENTEROLOGY,BAMC | 369 | 26 | 6.58% |
| GYNECOLOGY,BAMC | 144 | 10 | 6.49% |
| HEMATOLOGY ONCOLOGY BAMC | 82 | 5 | 5.75% |
| DERMATOLOGY,BAMC | 389 | 23 | 5.58% |
| ORTHOPEDICS,BAMC | 359 | 21 | 5.53% |
| PHYSICAL THERAPY,BAMC | 639 | 36 | 5.33% |
| UROLOGY CLINIC,BAMC | 219 | 12 | 5.19% |
| COUMADIN CLINIC,BAMC | 58 | 3 | 4.92% |
| PERIPHERAL VASCULAR CL,BAMC | 79 | 3 | 3.66% |
| ECHO BAMC | 92 | 3 | 3.16% |
| PULMONARY,BAMC | 237 | 5 | 2.07% |
| RHEUMATOLOGY,BAMC | 52 | 1 | 1.89% |
| GEN SURGERY,BAMC | 214 | 4 | 1.83% |
| ENDOCRINOLOGY,BAMC | 65 | 1 | 1.52% |
| PAIN MANAGEMENT CL,BAMC | 78 | 1 | 1.27% |
| CARDIAC REHABILITATION,BAMC | 57 | 0 | 0.00% |
| HOLTER EVENT BAMC | 47 | 0 | 0.00% |
| NEPHROLOGY,BAMC | 49 | 0 | 0.00% |

Appendix E

Code Sheet for Predictors of No-Shows

| SPSS Variable | Variable Type | SPSS Data Codes |
|---|---------------|--|
| Dependent Variable: Appointment Status | Dichotomous | 1 = No-Show 0 = Kept |
| Gender | Dichotomous | 1 = Male 0 = Female |
| Beneficiary Category | | |
| Active Duty | Dichotomous | 1 = Active Duty 0 = Otherwise |
| Active Duty Dependent | Dichotomous | 1 = Active Duty Dependent 0 = Otherwise |
| Retired | Dichotomous | 1 = Retired 0 = Otherwise |
| Retired Family Member | Dichotomous | 1 = Retired Family Member 0 = Otherwise |
| Branch of Service | | |
| Army | Dichotomous | 1 = Army 0 = Otherwise |
| Air Force | Dichotomous | 1 = Air Force 0 = Otherwise |
| Navy | Dichotomous | 1 = Navy 0 = Otherwise |
| Marine Corps | Dichotomous | 1 = Marine Corps 0 = Otherwise |
| Enrollment Status | Dichotomous | 1 = Prime 0 = Plus |
| Time of Day | Dichotomous | 1 = AM 0 = PM |
| Day of Week | | |
| Monday | Dichotomous | 1 = Monday 0 = Otherwise |
| Tuesday | Dichotomous | 1 = Tuesday 0 = Otherwise |

BAMC Specialty Care No-Show Rates 51

| | | |
|--|-------------|---|
| | | |
| Wednesday | Dichotomous | 1 = Wednesday 0 = Otherwise |
| Thursday | Dichotomous | 1 = Thursday 0 = Otherwise |
| Friday | Dichotomous | 1 = Friday 0 = Otherwise |
| Provider by Type | | |
| Paraprofessional | Dichotomous | 1 = Paraprofessional 0 = Otherwise |
| Other Medical Professional | Dichotomous | 1 = Other Medical Professional 0 = Otherwise |
| Medical Resident | Dichotomous | 1 = Medical Resident 0 = Otherwise |
| Medical Fellow | Dichotomous | 1 = Medical Fellow 0 = Otherwise |
| Physician | Dichotomous | 1 = Physician 0 = Otherwise |
| Age (years) | Continuous | 0,1,2,3.....92 years |
| Time of referral, till time of appointment (Days) | Continuous | 0,1,2,3.....91 days |
| Time of referral, till time appointment made (Days) | Continuous | 0,1,2,3.....68 days |
| Time appointment made, till time of appointment (Days) | Continuous | 0,1,2,3.....76 days |

Appendix F

Sample Specialty Care Referral
(Using a Fictional Patient, Diagnosis, and Clinic)

POLLOCK, JILLIAN L Age: 16 03/555-44-0825 CONSULT ORDER
PEDIATRIC SUBSPECIALTY 010708-00004

=====

Clinic Specialty: PEDIATRICS

Consulting Clinic: SAMM CONSULT APPT MGMT OFFICE

Reason for Consult:

PED NEURO Please evaluate and treat this 16 y/o female with recurring
headaches. Failed 6 months treatment on

Provisional Diagnosis:

Migraine

Priority: ROUTINE

No. of Visits: 5 Referral Authorized until: 06 Sep 2001

Request Advice From Specialist Only: NO

Help = HELP

Exit = F10 File/Exit = D0

Personal Data - Privacy Act of 1974 (PL-93-579)

INSERT OFF

Appendix G

San Antonio Multi System Market Specialty Referral Consult Card



Your provider has requested a
consult for

_____ (Specialty)

Please call the San Antonio Consult & Appointment
Management Office, if you are not called within 5 -7
business days of today's date _____

(Date).

(210) 916-9900 Option 4

*If you have questions for your provider, please leave a message
at _____ (Provider Name &
Number)*

Appendix H

Acronyms

| | |
|--------|---|
| AD | Active Duty |
| BAMC | Brooke Army Medical Center |
| CAMO | Consult and Appointment Management Office |
| CHCS | Composite Health Care System |
| DoD | Department of Defense |
| DEERS | Defense Enrollment Eligibility Reporting System |
| EHR | Electronic Health Record |
| FY | Fiscal Year |
| HMO | Health Maintenance Organization |
| IRB | Institutional Review Board |
| LWOBS | Left Without Being Seen |
| MCSC | Managed Care Support Contractor |
| MHS | Military Health System |
| MHSS | Military Health Services System |
| MTF | Medical Treatment Facility |
| NCHC | National Coalition on Health Care |
| NHS | National Healthcare System |
| OB/GYN | Obstetrics/ Gynecology |
| PCM | Primary Care Manager |
| PCP | Primary Care Physician |
| PSC | Private Sector Care |

| | |
|-------|---|
| RM | Referral Management |
| RVU | Relative Value Unit |
| SAMSM | San Antonio Multi Service Market |
| SOP | Standard Operating Procedure |
| SPSS | Statistical Package for the Social Sciences |
| TMA | TRICARE Management Activity |
| WHMC | Wilford Hall Medical Center |

Appendix I

Reasons Patients Fail to Show for Appointments

(Hussain-Gambles, Neal, Dempsey, Lawlor & Hodgson, 2004)

Patient forgot about the appointment

Patient couldn't be bothered/contacted

Patient's symptoms were better

Provider initiated follow up appointment was no longer need

Patient in hospital at the time

Patient too ill to attend

Patient overslept

Appointment had been cancelled by patient (practice administrative error)

Patient unable to get time off work

Patient had transportation difficulties

Appointment was not with doctor of choice

Patient unable to get there because of weather

Patient had family commitments

Appointment was at an inconvenient time

Appendix J

Sample Interview Questions (Lacy, Paulman, Reuter, & Lovejoy, 2004)

1. I'm researching why a lot of people make doctor appointments but do not show up.
Why do you think people do this?
2. Tell me about a time you or someone you know had an appointment but did not or could not come.
3. What made it hard to keep the appointment with the doctor? Is there anything that makes it hard for you to keep an appointment?
4. Do you have to make any special arrangements to get here? (Transportation, child care, insurance company referrals, work, other)
5. How difficult is it for you to be on time for your appointment?
6. How do you know when you or someone in your family needs to see the doctor?
7. How do you decide to choose this clinic?
8. What do you come here (the clinic) for?
9. How do you feel about having to see the doctor (e.g., worried, anxious, hopeful, etc.)?
Why?